



Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1217607
OIL & GAS CONSERVATION DIVISION

Form ACO-1

August 2013

Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

- New Well Re-Entry Workover
- Oil WSW SWD SIOW
- Gas D&A ENHR SIGW
- OG GSW Temp. Abd.
- CM (Coal Bed Methane)
- Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

- Deepening Re-perf. Conv. to ENHR Conv. to SWD
- Plug Back Conv. to GSW Conv. to Producer
- Commingled Permit #: _____
- Dual Completion Permit #: _____
- SWD Permit #: _____
- ENHR Permit #: _____
- GSW Permit #: _____

| | | |
|-----------------------------------|-----------------|---|
| Spud Date or Recompletion Date | Date Reached TD | Completion Date or Recompletion Date |
|-----------------------------------|-----------------|---|

API No. 15 - _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

- Confidentiality Requested
Date: _____
- Confidential Release Date: _____
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: _____ Date: _____

1217607

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

| | | | | |
|---|--|------------------------------|----------------------------------|---------------------------------|
| Drill Stem Tests Taken <i>(Attach Additional Sheets)</i> | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Log | Formation (Top), Depth and Datum | <input type="checkbox"/> Sample |
| Samples Sent to Geological Survey | <input type="checkbox"/> Yes <input type="checkbox"/> No | Name | Top | Datum |
| Cores Taken | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| Electric Log Run | <input type="checkbox"/> Yes <input type="checkbox"/> No | | | |
| List All E. Logs Run: | | | | |

| CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used | | | | | | | |
|---|-------------------|---------------------------|-------------------|---------------|----------------|--------------|----------------------------|
| Report all strings set-conductor, surface, intermediate, production, etc. | | | | | | | |
| Purpose of String | Size Hole Drilled | Size Casing Set (In O.D.) | Weight Lbs. / Ft. | Setting Depth | Type of Cement | # Sacks Used | Type and Percent Additives |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| ADDITIONAL CEMENTING / SQUEEZE RECORD | | | | |
|---|------------------|----------------|--------------|----------------------------|
| Purpose: | Depth Top Bottom | Type of Cement | # Sacks Used | Type and Percent Additives |
| <input type="checkbox"/> Perforate | | | | |
| <input type="checkbox"/> Protect Casing | | | | |
| <input type="checkbox"/> Plug Back TD | | | | |
| <input type="checkbox"/> Plug Off Zone | | | | |

Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

| Shots Per Foot | PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated | Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i> | Depth |
|----------------|---|--|-------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

TUBING RECORD: Size: _____ Set At: _____ Packer At: _____ Liner Run: Yes No

Date of First, Resumed Production, SWD or ENHR: _____ Producing Method: Flowing Pumping Gas Lift Other *(Explain)* _____

| Estimated Production Per 24 Hours | Oil Bbls. | Gas Mcf | Water Bbls. | Gas-Oil Ratio | Gravity |
|-----------------------------------|-----------|---------|-------------|---------------|---------|
| | | | | | |

| | | |
|--|---|---|
| DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i> | METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____ | PRODUCTION INTERVAL: _____ _____ |
|--|---|---|

| | |
|-----------|--|
| Form | ACO1 - Well Completion |
| Operator | SandRidge Exploration and Production LLC |
| Well Name | Miller 3405 2-3H |
| Doc ID | 1217607 |

Perforations

| Shots Per Foot | Perforation Record | Material Record | Depth |
|----------------|--------------------|------------------------|-----------|
| 1 | 5348-5350 | Baker Fracpoint System | 5348-8874 |
| 1 | 5490-5492 | | |
| 1 | 5673-5675 | | |
| 1 | 5859-5861 | | |
| 1 | 6050-6052 | | |
| 1 | 6239-6241 | | |
| 1 | 6427-6429 | | |
| 1 | 6618-6620 | | |
| 1 | 6802-6804 | | |
| 1 | 6994-6996 | | |
| 1 | 7184-7186 | | |
| 1 | 7368-7370 | | |
| 1 | 7556-7558 | | |
| 1 | 7746-7748 | | |
| 1 | 7930-7932 | | |
| 1 | 8121-8123 | | |
| 1 | 8306-8308 | | |
| 1 | 8494-8496 | | |
| 1 | 8653-8655 | | |
| 1 | 8872-8874 | | |

Hydraulic Fracturing Fluid Product Component Information Disclosure

| | |
|--------------------------------|--------------------|
| Job Start Date: | 6/1/2014 |
| Job End Date: | 6/2/2014 |
| State: | Kansas |
| County: | Harper |
| API Number: | 15-077-22041-01-00 |
| Operator Name: | SandRidge Energy |
| Well Name and Number: | Miller 3405 2-3H |
| Longitude: | -97.84395946 |
| Latitude: | 37.10932037 |
| Datum: | NAD27 |
| Federal/Tribal Well: | NO |
| True Vertical Depth: | 4,567 |
| Total Base Water Volume (gal): | 2,088,085 |
| Total Base Non Water Volume: | 0 |



Hydraulic Fracturing Fluid Composition:

| Trade Name | Supplier | Purpose | Ingredients | Chemical Abstract Service Number (CAS #) | Maximum Ingredient Concentration in Additive (% by mass)** | Maximum Ingredient Concentration in HF Fluid (% by mass)** | Comments |
|--|----------|--------------------------------|-----------------------------------|--|--|--|----------|
| Water | Archer | Carrier/Base Fluid | | | | | |
| | | | Water | 7732-18-5 | 100.00000 | 94.70975 | None |
| Sand (Proppant) | Archer | Proppant | | | | | |
| | | | Silica Substrate | NA | 100.00000 | 4.39984 | None |
| Hydrochloric Acid (15%) | Archer | Acidizing | | | | | |
| | | | Hydrochloric Acid | 7647-01-0 | 15.00000 | 0.11206 | None |
| | | | NONYL PHENOL, 4 MOL | 104-40-5 | 10.00000 | 0.00457 | None |
| | | | Methyl Alcohol | 67-56-1 | 80.00000 | 0.00090 | None |
| | | | thiourea-formaldehyde copolymer | 68527-49-1 | 15.00000 | 0.00017 | None |
| Chemflush | Archer | Enviro-Friendly Chemical Flush | | | | | |
| | | | Hydrotreated Petroleum Distillate | 64742-47-8 | 99.00000 | 0.00370 | None |
| | | | Alcohol Ethoxylate Surfactants | NA | 10.00000 | 0.00037 | None |
| AIC | Archer | Liquid Acid Iron Control | | | | | |
| | | | Acetic Acid | 64-19-7 | 50.00000 | 0.00201 | None |
| | | | Citric Acid | 77-92-9 | 30.00000 | 0.00120 | None |
| Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS. | | | | | | | |
| | | Other Chemicals | | | | | |

| | | | | | |
|--|--|---|------------|--|---------|
| | | Water | 7732-18-5 | | 0.04712 |
| | | WATER | 7732-18-5 | | 0.02740 |
| | | Aliphatic Hydrocarbon | 64742-47-8 | | 0.02356 |
| | | Anionic Polymer | N/A | | 0.02356 |
| | | TRADE SECRET | N/A | | 0.01827 |
| | | Water | 7732-18-5 | | 0.00924 |
| | | METHANOL | 67-56-1 | | 0.00457 |
| | | ISOPROPANOL | 67-63-0 | | 0.00457 |
| | | Polyol Ester | N/A | | 0.00393 |
| | | Oxyalkylated Alcohol | 68002-97-1 | | 0.00393 |
| | | Sodium Salt of Phosphate Ester | 68131-72-6 | | 0.00154 |
| | | Acrylic Polymer | 28205-96-1 | | 0.00154 |
| | | Water | 7732-18-5 | | 0.00140 |
| | | Polyglycol Ester | N/A | | 0.00079 |
| | | Alcohol Ethoxylate Surfactants | N/A | | 0.00017 |
| | | n-olefins | N/A | | 0.00009 |
| | | Tetrasodium Ethylenediaminetetraacetate | 64-02-8 | | 0.00008 |
| | | Propargyl Alcohol | 107-19-7 | | 0.00007 |
| | | Water | 7732-18-5 | | |
| | | Acetic Acid | 64-19-7 | | |
| | | Cinnamic Aldehyde | 104-55-2 | | |
| | | Surfactant | N/A | | |
| | | Buffer | N/A | | |

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

| | | | | |
|----------------------------------|-------------------------|---|--------------------------------------|--------------------------------|
| JOB SUMMARY | | | PROJECT NUMBER SOK 3653 | TICKET DATE 04/30/14 |
| COUNTY Harper | State Kansas | COMPANY Bridge Exploration & Produc | CUSTOMER REP Danny Bernard | |
| LEASE NAME Miller 3405 | Well No. 2-3H | JOB TYPE Surface | EMPLOYEE NAME marcos q | |

| | | | | | | |
|----------|------------------------|----------|--|--|--|--|
| EMP NAME | Marcos Quintana | 0 | | | | |
| | Wallace Berry | | | | | |
| | David Thomas | | | | | |
| | james b | | | | | |

Form. Name _____ Type: _____
 Packer Type _____ Set At **0**
 Bottom Hole Temp. **80** Pressure _____
 Retainer Depth _____ Total Depth **600**

| Date | Called Out | On Location | Job Started | Job Completed |
|------|------------------|------------------|------------------|------------------|
| | 4/29/2014 | 4/30/2014 | 4/30/2014 | 4/30/2014 |
| Time | 1900 | 0130 | 0450 | 545 |

| Tools and Accessories | | |
|--------------------------|-----|------|
| Type and Size | Qty | Make |
| Auto Fill Tube | 0 | IR |
| Insert Float Val | 0 | IR |
| Centralizers | 0 | IR |
| Top Plug | 0 | IR |
| HEAD | 0 | IR |
| Limit clamp | 0 | IR |
| Weld-A | 0 | IR |
| Texas Pattern Guide Shoe | 0 | IR |
| Cement Basket | 0 | IR |

| Well Data | | | | | | |
|--------------|----------|--------|---------|-------|---------|-----------|
| | New/Used | Weight | Size | Grade | From | To |
| Casing | | 36# | 9 1/2" | | Surface | 600 |
| Liner | | | | | | |
| Liner | | | | | | |
| Tubing | | | 0 | | | |
| Drill Pipe | | | | | | |
| Open Hole | | | 12 1/4" | | Surface | 600 |
| Perforations | | | | | | Shots/Ft. |
| Perforations | | | | | | |
| Perforations | | | | | | |

| Materials | | | |
|---------------|-------------|---------|-----------------------|
| Mud Type | WBM | Density | 9 Lb/Gal |
| Disp. Fluid | Fresh Water | Density | 8.33 Lb/Gal |
| Spacer type | Fresh Water | BBL. | 10 8.33 |
| Spacer type | BBL. | | |
| Acid Type | Gal. | % | |
| Acid Type | Gal. | % | |
| Surfactant | Gal. | In | |
| NE Agent | Gal. | In | |
| Fluid Loss | Gal/Lb | In | |
| Gelling Agent | Gal/Lb | In | |
| Fric. Red. | Gal/Lb | In | |
| MISC. | Gal/Lb | In | |

| Hours On Location | | Operating Hours | | Description of Job |
|-------------------|-------|-----------------|-------|--------------------|
| Date | Hours | Date | Hours | |
| 4/30 | 4.0 | 4/30 | 2.0 | Surface |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Total | 4.0 | Total | 2.0 | |

Perfpac Balls _____ Qty. _____
 Other _____
 Other _____
 Other _____
 Other _____

| Pressures | | |
|----------------------|-----------|-------------------|
| MAX | 1,500 PSI | AVG. 300 |
| Average Rates in BPM | | |
| MAX | 6 BPM | AVG 5 |
| Cement Left in Pipe | | |
| Feet | 47 | Reason SHOE JOINT |

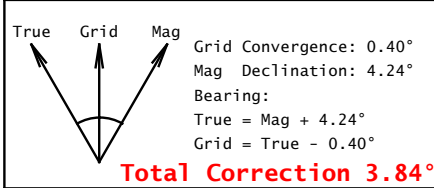
| Cement Data | | | | | | |
|-------------|-------|-------------------------|---|-------|-------|---------|
| Stage | Sacks | Cement | Additives | W/Rq. | Yield | Lbs/Gal |
| 1 | 230 | EX Lite Premium Plus 65 | (6% Gel) 2% Calcium Chloride - 1/4pps Cello-Flake - .4% C-41P | 11.11 | 2.01 | 12.40 |
| 2 | 130 | Premium Plus (Class C) | 2% Calcium Chloride - 1/4pps Cello-Flake | 6.32 | 1.32 | 14.80 |
| 3 | *100 | Premium Plus (Class C) | *2% Calcium Chloride on side to use if necessary | *6.32 | *1.32 | *14.8 |

| Summary | | | | | |
|--------------------|----------------------|---------------|---------------|------------------------------|---------|
| Preflush Breakdown | Type: _____ | MAXIMUM _____ | 1,500 PSI | Preflush: BBI _____ | 10.00 |
| | Lost Returns-N _____ | NO/FULL _____ | | Load & Bkdn: Gal - BBI _____ | N/A |
| | Actual TOC _____ | SURFACE _____ | | Excess /Return BBI _____ | 50 |
| Average | Bump Plug PSI: _____ | 900 | | Calc. TOC: _____ | SURFACE |
| ISIP _____ | 5 Min. _____ | 10 Min. _____ | 15 Min. _____ | Final Circ. PSI: _____ | 200 |
| | | | | Cement Slurry: BBI _____ | 113.0 |
| | | | | Total Volume BBI _____ | 163.00 |

CUSTOMER REPRESENTATIVE _____ SIGNATURE _____



Miller 3405 2-3H
 Latshaw 36
 Harper County, KS
 X= 2191320.00'
 Y= 161852.00'
 Plan 5 vs Actual



KB: 1265'
 GL: 1245'

Weatherford

Plan Data for Miller 3405 2-3H

Field: SandRidge Energy - Harper County, KS S NAD 27 US FT
 Map Unit: USFt Vertical Reference Datum (VRD): Mean Sea Level
 Projected Coordinate System: NAD27 / Kansas South

Well: Miller 3405 2-3H

Type: Main-Well
 File Number:
 Plan Folder: P5 Plan: P5
 Vertical Section: Position offset of origin from Site centre:
 +N/-S: 0.00USft Azimuth: 10.79°
 +E/-W: 0.00USft
 Magnetic Parameters:
 Model: Field Strength: Declination: Dip: Date:
 IGRF 51673(nT) 4.24° 65.19° 2014-04-12

Plan Data for Miller 3405 2-3H

Plan Point Information:
 DogLeg Severity Unit: °/100.00ft Position offsets from Site centre

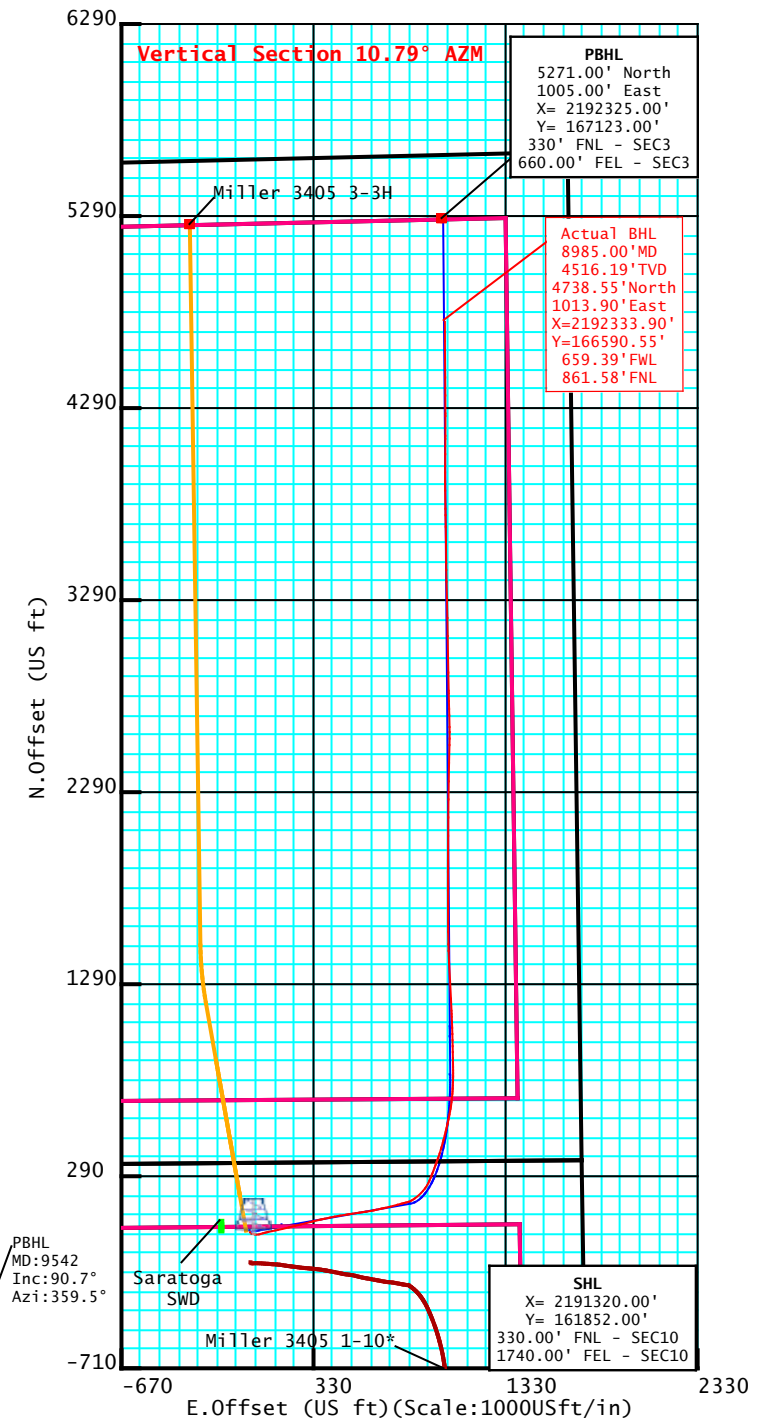
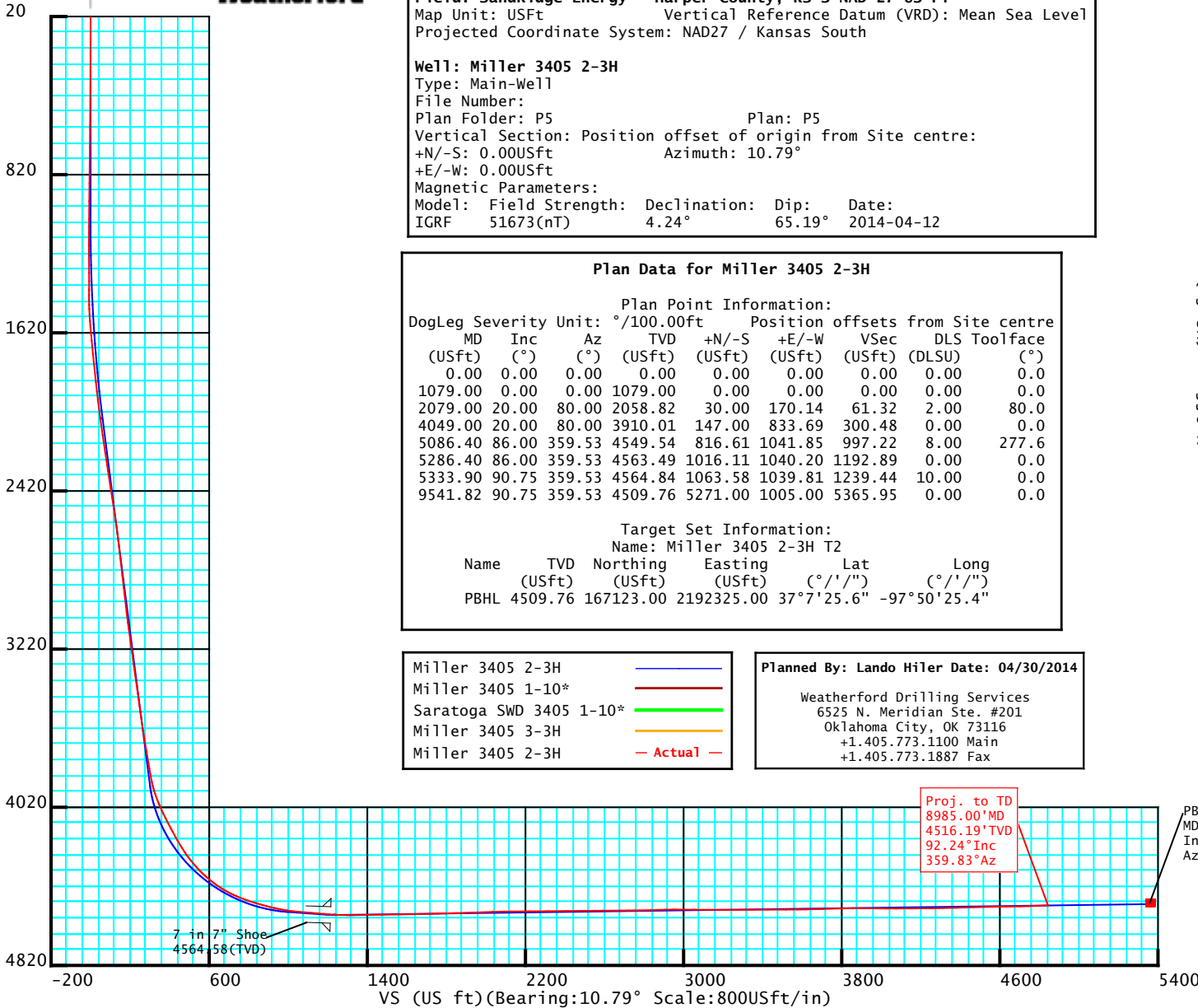
| MD (USft) | Inc (°) | Az (°) | TVD (USft) | +N/-S (USft) | +E/-W (USft) | VSec (USft) | DLS (DLSU) | Toolface (°) |
|-----------|---------|--------|------------|--------------|--------------|-------------|------------|--------------|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 |
| 1079.00 | 0.00 | 0.00 | 1079.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 |
| 2079.00 | 20.00 | 80.00 | 2058.82 | 30.00 | 170.14 | 61.32 | 2.00 | 80.0 |
| 4049.00 | 20.00 | 80.00 | 3910.01 | 147.00 | 833.69 | 300.48 | 0.00 | 0.0 |
| 5086.40 | 86.00 | 359.53 | 4549.54 | 816.61 | 1041.85 | 997.22 | 8.00 | 277.6 |
| 5286.40 | 86.00 | 359.53 | 4563.49 | 1016.11 | 1040.20 | 1192.89 | 0.00 | 0.0 |
| 5333.90 | 90.75 | 359.53 | 4564.84 | 1063.58 | 1039.81 | 1239.44 | 10.00 | 0.0 |
| 9541.82 | 90.75 | 359.53 | 4509.76 | 5271.00 | 1005.00 | 5365.95 | 0.00 | 0.0 |

Target Set Information:
 Name: Miller 3405 2-3H T2

| Name | TVD (USft) | Northing (USft) | Easting (USft) | Lat (°/'/") | Long (°/'/") |
|------|------------|-----------------|----------------|--------------|---------------|
| PBHL | 4509.76 | 167123.00 | 2192325.00 | 37°7'25.6" | -97°50'25.4" |

- Miller 3405 2-3H ———
- Miller 3405 1-10* ———
- Saratoga SWD 3405 1-10* ———
- Miller 3405 3-3H ———
- Miller 3405 2-3H ——— **Actual**

Planned By: Lando Hiler Date: 04/30/2014
 Weatherford Drilling Services
 6525 N. Meridian Ste. #201
 Oklahoma City, OK 73116
 +1.405.773.1100 Main
 +1.405.773.1887 Fax



5D Survey Report**SandRidge Energy**

Field Name: *SandRidge Energy - Harper County, KS S NAD 27 US FT*
Site Name: *Miller 3405 2-3H*
Well Name: *Miller 3405 2-3H*
Survey: *Definitive Survey*

27 May 2014



Miller 3405 2-3H

| | | | |
|--|--|--|------------------------------------|
| Field Name SandRidge Energy - Harper County, KS S NAD 27 US FT | Map Units : US ft | Company Name : SandRidge Energy | |
| | Vertical Reference Datum (VRD) : Mean Sea Level | | |
| | Projected Coordinate System : NAD27 / Kansas South | | |
| | Comment : | | |
| Site Name Miller 3405 2-3H | Units : US ft | North Reference : Grid | Convergence Angle : 0.40 |
| | Position | Northing : 161852.00 US ft | Latitude : 37° 6' 33.55" |
| | | Easting : 2191320.00 US ft | Longitude : -97° 50' 38.26" |
| | Site TVD Reference : Ground Level | | |
| | Elevation above Mean Sea Level: 1245.00 US ft | | |
| | Comment : | | |
| Slot Name Miller 3405 2-3H | Position (Offsets relative to Site Centre) | | |
| | +N / -S : 0.00 US ft | Northing : 161852.00 US ft | Latitude : 37°6'33.55" |
| | +E / -W : 0.00 US ft | Easting : 2191320.00 US ft | Longitude : -97°50'38.26" |
| | Slot TVD Reference : Ground Elevation | | |
| | Elevation above Mean Sea Level : 1245.00 US ft | | |
| | Comment : | | |
| Well Name Miller 3405 2-3H | Type : Main well | UWI : | |
| | Rig Height <i>Drill Floor</i> : 20.00 US ft | Comment : | |
| | Relative to Mean Sea Level: 1265.00 US ft | | |
| | Closure Distance : 4845.81 US ft | Closure Azimuth : 12.0774° | |
| | Vertical Section (Position of Origin Relative to Site) | | |
| | +N / -S : 0.00 US ft | +E / -W : 0.00 US ft | Az : 10.79° |

5D Survey Report

Target Set

Name : Miller 3405 2-3H T2

Number of Targets : 1

Comment :

| | | | |
|----------------------------|---|-----------------------------------|----------------------------------|
| TargetName: PBHL | Position (Relative to Site centre) | | |
| | +N / -S : 5271.00US ft | Northing : 167123.00 US ft | Latitude : 37°7'25.60" |
| Shape: Cuboid | +E / -W : 1005.00 US ft | Easting : 2192325.00US ft | Longitude : -97°50'25.39" |
| | TVD (Drill Floor) : 4509.76 US ft | | |
| | SS : -3244.76 US ft | | |
| Orientation | Azimuth : 0.00° | Inclination : 0.00° | |
| Dimensions | Length : 20.00 US ft | Breadth : 20.00 US ft | Height : 20.00 US ft |

Survey Name :Definitive Survey

Date : 12/Apr/2014

Survey Tool :

Comment :

Company :

Magnetic Model

Model Name: IGRF

Date: 12/Apr/2014

Field Strength: 51673.8 nT

Declination: 4.24°

Dip: 65.19°

Survey Tool Ranges

| Name | Start MD (US ft) | End MD (US ft) | Source Survey |
|--------------------|------------------|----------------|---------------------|
| Inc Only 3deg_WFTR | 0.00 | 569.00 | Rig SVY |
| MWD | 569.00 | 8985.00 | Weather MWD Surveys |

Well path created using minimum curvature

| Survey Points (Relative to Site centre, TVD relative to Drill Floor) | | | | | | | | | | |
|---|---------|--------|-------------|------------------|------------------|------------------|-----------------|------------|-------------------|----------------------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | N.Offset (US ft) | E.Offset (US ft) | Northing (US ft) | Easting (US ft) | VS (US ft) | DLS (°/100 US ft) | Comment |
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 161852.00 | 2191320.00 | 0.00 | 0.00 | 2 |
| 300.00 | 0.32 | 195.26 | 300.00 | -0.81 | -0.22 | 161851.19 | 2191319.78 | -0.84 | 0.11 | |
| 569.00 | 0.43 | 195.26 | 568.99 | -2.51 | -0.68 | 161849.49 | 2191319.32 | -2.59 | 0.04 | |
| 588.00 | 0.60 | 195.26 | 587.99 | -2.67 | -0.73 | 161849.33 | 2191319.27 | -2.76 | 0.89 | First WFT/MWD Survey |
| 679.00 | 0.56 | 208.01 | 678.99 | -3.52 | -1.06 | 161848.48 | 2191318.94 | -3.66 | 0.15 | |
| 771.00 | 0.70 | 213.77 | 770.98 | -4.39 | -1.59 | 161847.61 | 2191318.41 | -4.61 | 0.17 | |
| 863.00 | 0.69 | 192.10 | 862.98 | -5.40 | -2.02 | 161846.60 | 2191317.98 | -5.68 | 0.28 | |
| 954.00 | 0.70 | 174.23 | 953.97 | -6.49 | -2.07 | 161845.51 | 2191317.93 | -6.76 | 0.24 | |
| 1044.00 | 0.50 | 155.67 | 1043.96 | -7.39 | -1.86 | 161844.61 | 2191318.14 | -7.61 | 0.31 | |
| 1135.00 | 2.97 | 107.89 | 1134.92 | -8.48 | 0.55 | 161843.52 | 2191320.55 | -8.22 | 2.92 | |
| 1227.00 | 5.30 | 97.00 | 1226.67 | -9.73 | 7.04 | 161842.27 | 2191327.04 | -8.24 | 2.66 | |
| 1317.00 | 5.18 | 94.26 | 1316.30 | -10.54 | 15.21 | 161841.46 | 2191335.21 | -7.50 | 0.31 | |

5D Survey Report

| Survey Points (Relative to Site centre, TVD relative to Drill Floor) | | | | | | | | | | |
|---|------------|-----------|----------------|---------------------|---------------------|---------------------|--------------------|---------------|----------------------|---------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | N.Offset (US ft) | E.Offset (US ft) | Northing (US ft) | Easting (US ft) | VS (US ft) | DLS (°/100 US ft) | Comment |
| 1407.00 | 6.74 | 108.38 | 1405.81 | -12.50 | 24.28 | 161839.50 | 2191344.28 | -7.74 | 2.37 | |
| 1502.00 | 9.31 | 87.24 | 1499.89 | -13.89 | 37.25 | 161838.11 | 2191357.25 | -6.67 | 4.08 | |
| 1596.00 | 11.00 | 72.57 | 1592.43 | -10.84 | 53.40 | 161841.16 | 2191373.40 | -0.65 | 3.27 | |
| 1691.00 | 12.31 | 75.09 | 1685.47 | -5.52 | 71.84 | 161846.48 | 2191391.84 | 8.03 | 1.48 | |
| 1786.00 | 14.55 | 77.21 | 1777.87 | -0.27 | 93.26 | 161851.73 | 2191413.26 | 17.20 | 2.41 | |
| 1880.00 | 15.68 | 78.07 | 1868.62 | 4.97 | 117.21 | 161856.97 | 2191437.21 | 26.83 | 1.23 | |
| 1974.00 | 17.59 | 79.19 | 1958.68 | 10.26 | 143.59 | 161862.26 | 2191463.59 | 36.96 | 2.06 | |
| 2069.00 | 18.49 | 76.22 | 2049.01 | 16.54 | 172.32 | 161868.54 | 2191492.32 | 48.51 | 1.35 | |
| 2163.00 | 19.39 | 76.31 | 2137.92 | 23.79 | 201.96 | 161875.79 | 2191521.96 | 61.17 | 0.96 | |
| 2258.00 | 19.68 | 76.26 | 2227.45 | 31.32 | 232.82 | 161883.32 | 2191552.82 | 74.35 | 0.31 | |
| 2352.00 | 19.85 | 76.15 | 2315.91 | 38.90 | 263.69 | 161890.90 | 2191583.69 | 87.57 | 0.19 | |
| 2446.00 | 21.00 | 75.90 | 2404.00 | 46.82 | 295.52 | 161898.82 | 2191615.52 | 101.32 | 1.23 | |
| 2540.00 | 19.27 | 75.35 | 2492.25 | 54.85 | 326.87 | 161906.85 | 2191646.87 | 115.07 | 1.85 | |
| 2634.00 | 20.23 | 77.14 | 2580.72 | 62.39 | 357.72 | 161914.39 | 2191677.72 | 128.25 | 1.21 | |
| 2728.00 | 17.21 | 79.10 | 2669.74 | 68.64 | 387.23 | 161920.64 | 2191707.23 | 139.92 | 3.28 | |
| 2823.00 | 16.43 | 76.98 | 2760.68 | 74.32 | 414.12 | 161926.32 | 2191734.12 | 150.53 | 1.04 | |
| 2918.00 | 17.32 | 79.09 | 2851.59 | 80.02 | 441.09 | 161932.02 | 2191761.09 | 161.19 | 1.14 | |
| 3012.00 | 18.65 | 81.40 | 2940.99 | 84.92 | 469.70 | 161936.92 | 2191789.70 | 171.35 | 1.61 | |
| 3107.00 | 19.07 | 80.31 | 3030.89 | 89.80 | 500.01 | 161941.80 | 2191820.01 | 181.82 | 0.58 | |
| 3201.00 | 22.25 | 81.27 | 3118.84 | 95.09 | 532.75 | 161947.09 | 2191852.75 | 193.15 | 3.40 | |
| 3295.00 | 24.01 | 81.71 | 3205.28 | 100.55 | 569.27 | 161952.55 | 2191889.27 | 205.34 | 1.88 | |
| 3390.00 | 21.56 | 82.06 | 3292.86 | 105.75 | 605.68 | 161957.75 | 2191925.68 | 217.27 | 2.58 | |
| 3485.00 | 21.94 | 78.11 | 3381.10 | 111.82 | 640.34 | 161963.82 | 2191960.34 | 229.72 | 1.59 | |
| 3580.00 | 17.84 | 76.85 | 3470.41 | 118.79 | 671.89 | 161970.79 | 2191991.89 | 242.47 | 4.34 | |
| 3674.00 | 20.44 | 78.62 | 3559.21 | 125.30 | 702.01 | 161977.30 | 2192022.01 | 254.51 | 2.83 | |
| 3768.00 | 20.75 | 75.45 | 3647.21 | 132.73 | 734.22 | 161984.73 | 2192054.22 | 267.83 | 1.23 | |
| 3863.00 | 20.64 | 74.48 | 3736.08 | 141.43 | 766.64 | 161993.43 | 2192086.64 | 282.46 | 0.38 | |
| 3957.00 | 21.97 | 75.83 | 3823.65 | 150.17 | 799.66 | 162002.17 | 2192119.66 | 297.22 | 1.51 | |
| 3989.00 | 22.57 | 75.17 | 3853.26 | 153.21 | 811.40 | 162005.21 | 2192131.40 | 302.40 | 2.03 | |
| 4020.00 | 22.69 | 73.02 | 3881.88 | 156.48 | 822.87 | 162008.48 | 2192142.87 | 307.76 | 2.70 | |
| 4051.00 | 23.66 | 65.81 | 3910.38 | 160.77 | 834.26 | 162012.77 | 2192154.26 | 314.11 | 9.67 | |
| 4082.00 | 24.96 | 58.08 | 3938.64 | 166.78 | 845.49 | 162018.78 | 2192165.49 | 322.12 | 11.08 | |
| 4114.00 | 26.87 | 54.67 | 3967.42 | 174.54 | 857.12 | 162026.54 | 2192177.12 | 331.91 | 7.57 | |
| 4145.00 | 27.91 | 51.19 | 3994.95 | 183.13 | 868.49 | 162035.13 | 2192188.49 | 342.49 | 6.16 | |
| 4178.00 | 29.04 | 47.28 | 4023.96 | 193.41 | 880.40 | 162045.41 | 2192200.40 | 354.81 | 6.60 | |
| 4209.00 | 30.12 | 43.72 | 4050.92 | 204.14 | 891.30 | 162056.14 | 2192211.30 | 367.39 | 6.65 | |
| 4241.00 | 30.05 | 40.63 | 4078.61 | 216.02 | 902.07 | 162068.02 | 2192222.07 | 381.08 | 4.85 | |
| 4272.00 | 29.86 | 36.33 | 4105.47 | 228.13 | 911.69 | 162080.13 | 2192231.69 | 394.77 | 6.95 | |
| 4303.00 | 29.73 | 31.06 | 4132.38 | 240.93 | 920.23 | 162092.93 | 2192240.23 | 408.95 | 8.46 | |
| 4335.00 | 29.75 | 25.90 | 4160.17 | 254.88 | 927.80 | 162106.88 | 2192247.80 | 424.06 | 8.00 | |
| 4366.00 | 30.75 | 22.96 | 4186.95 | 269.09 | 934.25 | 162121.09 | 2192254.25 | 439.24 | 5.76 | |

5D Survey Report

| Survey Points (Relative to Site centre, TVD relative to Drill Floor) | | | | | | | | | | |
|---|------------|-----------|----------------|---------------------|---------------------|---------------------|--------------------|---------------|----------------------|---------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | N.Offset (US ft) | E.Offset (US ft) | Northing (US ft) | Easting (US ft) | VS (US ft) | DLS (°/100 US ft) | Comment |
| 4397.00 | 31.56 | 22.80 | 4213.48 | 283.87 | 940.48 | 162135.87 | 2192260.48 | 454.92 | 2.63 | |
| 4428.00 | 33.61 | 21.94 | 4239.60 | 299.31 | 946.83 | 162151.31 | 2192266.83 | 471.27 | 6.78 | |
| 4460.00 | 36.10 | 20.84 | 4265.85 | 316.34 | 953.50 | 162168.34 | 2192273.50 | 489.25 | 8.03 | |
| 4491.00 | 39.44 | 20.02 | 4290.35 | 334.13 | 960.12 | 162186.13 | 2192280.12 | 507.96 | 10.90 | |
| 4521.00 | 41.40 | 20.45 | 4313.19 | 352.38 | 966.85 | 162204.38 | 2192286.85 | 527.15 | 6.60 | |
| 4554.00 | 43.99 | 19.87 | 4337.45 | 373.38 | 974.56 | 162225.38 | 2192294.56 | 549.23 | 7.94 | |
| 4585.00 | 46.93 | 18.92 | 4359.19 | 394.22 | 981.89 | 162246.22 | 2192301.89 | 571.07 | 9.73 | |
| 4617.00 | 49.90 | 17.14 | 4380.42 | 416.98 | 989.29 | 162268.98 | 2192309.29 | 594.81 | 10.17 | |
| 4648.00 | 52.78 | 16.09 | 4399.79 | 440.18 | 996.21 | 162292.18 | 2192316.21 | 618.89 | 9.66 | |
| 4680.00 | 55.96 | 15.22 | 4418.43 | 465.22 | 1003.22 | 162317.22 | 2192323.22 | 644.80 | 10.18 | |
| 4710.00 | 58.70 | 14.77 | 4434.62 | 489.61 | 1009.75 | 162341.61 | 2192329.75 | 669.99 | 9.22 | |
| 4742.00 | 62.08 | 13.90 | 4450.43 | 516.56 | 1016.63 | 162368.56 | 2192336.63 | 697.75 | 10.82 | |
| 4774.00 | 65.43 | 13.34 | 4464.58 | 544.45 | 1023.39 | 162396.45 | 2192343.39 | 726.41 | 10.59 | |
| 4805.00 | 68.31 | 12.52 | 4476.75 | 572.23 | 1029.77 | 162424.23 | 2192349.77 | 754.90 | 9.60 | |
| 4835.00 | 70.21 | 11.60 | 4487.38 | 599.67 | 1035.63 | 162451.67 | 2192355.63 | 782.95 | 6.95 | |
| 4867.00 | 72.16 | 10.16 | 4497.70 | 629.41 | 1041.34 | 162481.41 | 2192361.34 | 813.23 | 7.43 | |
| 4898.00 | 73.98 | 8.17 | 4506.73 | 658.69 | 1046.06 | 162510.69 | 2192366.06 | 842.88 | 8.50 | |
| 4929.00 | 74.54 | 6.43 | 4515.14 | 688.28 | 1049.85 | 162540.28 | 2192369.85 | 872.66 | 5.70 | |
| 4961.00 | 75.56 | 4.63 | 4523.39 | 719.05 | 1052.83 | 162571.05 | 2192372.83 | 903.44 | 6.30 | |
| 4992.00 | 77.44 | 2.93 | 4530.63 | 749.13 | 1054.82 | 162601.13 | 2192374.82 | 933.36 | 8.08 | |
| 5023.00 | 79.59 | 1.88 | 4536.80 | 779.48 | 1056.09 | 162631.48 | 2192376.09 | 963.41 | 7.69 | |
| 5055.00 | 81.79 | 0.49 | 4541.98 | 811.05 | 1056.74 | 162663.05 | 2192376.74 | 994.54 | 8.10 | |
| 5086.00 | 83.56 | 359.43 | 4545.93 | 841.79 | 1056.72 | 162693.79 | 2192376.72 | 1024.74 | 6.64 | |
| 5118.00 | 85.32 | 358.99 | 4549.03 | 873.64 | 1056.28 | 162725.64 | 2192376.28 | 1055.94 | 5.67 | |
| 5149.00 | 85.52 | 359.14 | 4551.51 | 904.54 | 1055.78 | 162756.54 | 2192375.78 | 1086.20 | 0.81 | |
| 5181.00 | 85.31 | 358.77 | 4554.06 | 936.43 | 1055.19 | 162788.43 | 2192375.19 | 1117.41 | 1.33 | |
| 5212.00 | 85.24 | 358.53 | 4556.62 | 967.31 | 1054.47 | 162819.31 | 2192374.47 | 1147.62 | 0.80 | |
| 5243.00 | 85.16 | 358.65 | 4559.21 | 998.20 | 1053.71 | 162850.20 | 2192373.71 | 1177.81 | 0.46 | |
| 5366.00 | 88.81 | 357.69 | 4565.68 | 1120.94 | 1049.78 | 162972.94 | 2192369.78 | 1297.65 | 3.07 | |
| 5398.00 | 90.91 | 357.47 | 4565.76 | 1152.91 | 1048.43 | 163004.91 | 2192368.43 | 1328.80 | 6.60 | |
| 5460.00 | 91.05 | 357.25 | 4564.70 | 1214.84 | 1045.58 | 163066.84 | 2192365.58 | 1389.10 | 0.42 | |
| 5554.00 | 90.77 | 356.90 | 4563.21 | 1308.70 | 1040.78 | 163160.70 | 2192360.78 | 1480.41 | 0.48 | |
| 5649.00 | 90.77 | 356.98 | 4561.93 | 1403.56 | 1035.71 | 163255.56 | 2192355.71 | 1572.64 | 0.08 | |
| 5743.00 | 91.26 | 358.47 | 4560.26 | 1497.46 | 1031.98 | 163349.46 | 2192351.98 | 1664.19 | 1.67 | |
| 5837.00 | 91.68 | 359.84 | 4557.85 | 1591.42 | 1030.59 | 163443.42 | 2192350.59 | 1756.22 | 1.52 | |
| 5931.00 | 91.54 | 359.78 | 4555.21 | 1685.38 | 1030.28 | 163537.38 | 2192350.28 | 1848.46 | 0.16 | |
| 6025.00 | 91.89 | 359.84 | 4552.40 | 1779.34 | 1029.97 | 163631.34 | 2192349.97 | 1940.70 | 0.38 | |
| 6121.00 | 92.03 | 0.10 | 4549.11 | 1875.28 | 1029.92 | 163727.28 | 2192349.92 | 2034.94 | 0.31 | |
| 6215.00 | 90.42 | 0.37 | 4547.10 | 1969.26 | 1030.30 | 163821.26 | 2192350.30 | 2127.33 | 1.74 | |
| 6309.00 | 90.49 | 0.41 | 4546.36 | 2063.25 | 1030.94 | 163915.25 | 2192350.94 | 2219.78 | 0.09 | |
| 6404.00 | 90.49 | 0.64 | 4545.55 | 2158.25 | 1031.81 | 164010.25 | 2192351.81 | 2313.25 | 0.24 | |

5D Survey Report

| Survey Points (Relative to Site centre, TVD relative to Drill Floor) | | | | | | | | | | |
|---|------------|-----------|----------------|---------------------|---------------------|---------------------|--------------------|---------------|----------------------|------------------------|
| MD (US ft) | Inc (°) | Az (°) | TVD (US ft) | N.Offset (US ft) | E.Offset (US ft) | Northing (US ft) | Easting (US ft) | VS (US ft) | DLS (°/100 US ft) | Comment |
| 6498.00 | 90.70 | 0.58 | 4544.57 | 2252.24 | 1032.82 | 164104.24 | 2192352.82 | 2405.77 | 0.23 | |
| 6592.00 | 90.49 | 0.97 | 4543.59 | 2346.22 | 1034.09 | 164198.22 | 2192354.09 | 2498.33 | 0.47 | |
| 6687.00 | 90.21 | 0.96 | 4543.01 | 2441.21 | 1035.69 | 164293.21 | 2192355.69 | 2591.94 | 0.29 | |
| 6781.00 | 90.56 | 1.61 | 4542.38 | 2535.18 | 1037.79 | 164387.18 | 2192357.79 | 2684.64 | 0.79 | |
| 6875.00 | 90.63 | 358.84 | 4541.41 | 2629.17 | 1038.16 | 164481.17 | 2192358.16 | 2777.04 | 2.95 | |
| 6970.00 | 92.17 | 358.49 | 4539.08 | 2724.11 | 1035.95 | 164576.11 | 2192355.95 | 2869.89 | 1.66 | |
| 7064.00 | 89.86 | 358.85 | 4537.42 | 2818.06 | 1033.77 | 164670.06 | 2192353.77 | 2961.77 | 2.49 | |
| 7159.00 | 89.44 | 358.81 | 4538.00 | 2913.04 | 1031.83 | 164765.04 | 2192351.83 | 3054.71 | 0.44 | |
| 7253.00 | 89.65 | 359.10 | 4538.75 | 3007.02 | 1030.12 | 164859.02 | 2192350.12 | 3146.70 | 0.38 | |
| 7349.00 | 90.07 | 359.19 | 4538.98 | 3103.01 | 1028.68 | 164955.01 | 2192348.68 | 3240.73 | 0.45 | |
| 7443.00 | 90.28 | 358.95 | 4538.69 | 3197.00 | 1027.16 | 165049.00 | 2192347.16 | 3332.77 | 0.34 | |
| 7538.00 | 90.49 | 358.46 | 4538.05 | 3291.97 | 1025.01 | 165143.97 | 2192345.01 | 3425.66 | 0.56 | |
| 7633.00 | 90.00 | 358.39 | 4537.65 | 3386.93 | 1022.40 | 165238.93 | 2192342.40 | 3518.46 | 0.52 | |
| 7729.00 | 90.98 | 359.65 | 4536.83 | 3482.91 | 1020.76 | 165334.91 | 2192340.76 | 3612.43 | 1.66 | |
| 7824.00 | 91.82 | 359.28 | 4534.51 | 3577.88 | 1019.87 | 165429.88 | 2192339.87 | 3705.55 | 0.97 | |
| 7918.00 | 91.47 | 358.94 | 4531.81 | 3671.83 | 1018.41 | 165523.83 | 2192338.41 | 3797.57 | 0.52 | |
| 8012.00 | 89.93 | 359.07 | 4530.66 | 3765.80 | 1016.78 | 165617.80 | 2192336.78 | 3889.58 | 1.64 | |
| 8107.00 | 88.95 | 359.31 | 4531.59 | 3860.79 | 1015.44 | 165712.79 | 2192335.44 | 3982.63 | 1.06 | |
| 8202.00 | 90.70 | 0.33 | 4531.88 | 3955.78 | 1015.14 | 165807.78 | 2192335.14 | 4075.89 | 2.13 | |
| 8296.00 | 89.72 | 0.47 | 4531.53 | 4049.78 | 1015.79 | 165901.78 | 2192335.79 | 4168.35 | 1.05 | |
| 8392.00 | 90.91 | 0.46 | 4531.01 | 4145.77 | 1016.57 | 165997.77 | 2192336.57 | 4262.79 | 1.24 | |
| 8508.00 | 91.68 | 359.64 | 4528.38 | 4261.74 | 1016.67 | 166113.74 | 2192336.67 | 4376.73 | 0.97 | |
| 8602.00 | 91.54 | 359.70 | 4525.74 | 4355.70 | 1016.13 | 166207.70 | 2192336.13 | 4468.92 | 0.16 | |
| 8696.00 | 91.26 | 359.49 | 4523.45 | 4449.67 | 1015.47 | 166301.67 | 2192335.47 | 4561.11 | 0.37 | |
| 8790.00 | 90.28 | 359.57 | 4522.18 | 4543.66 | 1014.70 | 166395.66 | 2192334.70 | 4653.29 | 1.05 | |
| 8885.00 | 92.24 | 359.83 | 4520.09 | 4638.63 | 1014.20 | 166490.63 | 2192334.20 | 4746.49 | 2.08 | Last WFT/MWD Survey |
| 8985.00 | 92.24 | 359.83 | 4516.19 | 4738.55 | 1013.90 | 166590.55 | 2192333.90 | 4844.59 | 0.00 | Proj. to TD |